# ABSTRACT

An optical switching apparatus in an optical communication network selectively combines and separates, using OTDM and/or WDM, optical signal samples that are obtained by a spread spectrum technique or a combination of optical signal samples that are obtained by a spread spectrum technique and optical signal samples that are carried over discrete channel wavelengths. In upstream communication, when optical signal samples that are received at the optical switching apparatus include upstream optical signal samples that are obtained by a spread spectrum technique, the optical switching apparatus optically converts the optical signal samples provided thereto into a broadband combined series of upstream optical signal samples and routes the broadband combined series of upstream optical signal samples to a destination route. In downstream communication, when the optical switching apparatus receives a broadband series of downstream optical signal samples obtained by utilizing a spread spectrum technique, the optical switching apparatus optically converts the broadband series of downstream optical signal samples into an integer number nn>1 of series of downstream optical signal samples that include at least one of the following: broadband series of downstream optical signal samples; and series of downstream optical signal samples having the downstream optical signal samples carried over discrete channel wavelengths. The nn series of downstream optical signal samples are then routed to nn routes respectively. Related apparatus and methods are also described.